

Section 23–4 Leaves (pages 595–598)



Key Concepts

- How does the structure of a leaf enable it to carry out photosynthesis?
- How does gas exchange take place in a leaf?

Leaf Structure (page 595)

- The structure of a leaf is optimized for what purposes? _____

- What is a leaf blade? _____
- The blade is attached to the stem by a thin stalk called a(an) _____.
- Circle the letter of the type of tissue that covers a leaf.
a. vascular b. dermal c. ground d. petiole
- The vascular tissues of leaves are connected directly to the vascular tissues of _____.

Leaf Functions (pages 596–598)

- The bulk of most leaves is composed of a specialized ground tissue known as _____.
- How do the carbohydrates produced in photosynthesis get to the rest of the plant? _____

Match the leaf structure with its description.

Structure	Description
_____ 8. Palisade mesophyll	a. A bundle of xylem and phloem tissues
_____ 9. Spongy mesophyll	b. Specialized cells that control the opening and closing of stomata
_____ 10. Vein	c. A layer of mesophyll cells that absorb much of the light that enters the leaf
_____ 11. Stomata	d. Openings in the underside of the leaf
_____ 12. Guard cells	e. A loose tissue with many air spaces between its cells

- How do the air spaces in the spongy mesophyll connect with the exterior of the leaf? _____

- What is transpiration? _____

- Why must a plant have its stomata open at least part of the time? _____

16. What would probably happen to a plant that kept its stomata open all the time?

17. What is the balance plants maintain that prevents them from losing too much water?

18. Complete the flowchart about guard cells.

Guard cells are forced into a curved shape when water pressure becomes _____.



The guard cells pull away from one another, opening the _____.



Guard cells straighten out when water pressure _____.



The guard cells pull together, closing the _____.

19. Is the following sentence true or false? In general, stomata are closed at night. _____

20. How is the structure of the leaves of a pine tree an adaptation to dry conditions?

21. What are cactus leaves adapted for? _____

22. Why must carnivorous plants rely on insects for their source of nitrogen?

Reading Skill Practice

Writing a summary can help you remember the information that you have read. When you write a summary, write only the most important points. Write a summary of the information under the blue heading Leaf Functions. Your summary should be shorter than the text on which it is based. Do your work on a separate sheet of paper.